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Driving Green Supply Chain Management Performance through Supplier Selection and Value Internalisation: A Self-Determination Theory Perspective

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Abstract

Purpose – This paper applies self-determination theory (SDT) to green supply chain management (GSCM) and explores how green supplier selection (GSS) drives GSCM performance and how realisation of improved GSCM performance is contingent upon SDT mechanisms of autonomy, competence and relatedness.

Design/methodology/approach – This study draws on 18 semi-structured interviews and secondary data from a Germany-based first-tier aircraft interior manufacturer and its six key suppliers. The focal company was selected because it is recognised as having achieved high GSCM standards in the aerospace industry.

Findings – The study draws out the importance of green supplier selection, distinguishing between new and legacy suppliers, and offers significant insights into how suppliers' motivation and downstream GSCM criteria can be internalised at second-tier suppliers to drive GSCM performance.

Practical implications – Green supplier selection should be considered not only for new suppliers but also at an ongoing basis for legacy suppliers. Focal companies must realise the importance of motivating supply chain (SC) partners to realise GSCM practices and need to first build-up autonomy before focusing on competence and relatedness sub-dimensions.

Originality/value – We make a significant contribution to the GSCM literature by conducting a study of first-tier – second-tier relationships, thus moving beyond the buyer-supplier relationships investigated in extant studies. Our results theoretically and empirically draw

out key factors in green supplier selection and supplier motivation in engaging with GSCM practices, thus driving GSCM performance.

Keywords: Green supply chain management; green supplier selection; self-determination theory; green performance; aerospace manufacturer; SMEs; case study

Paper type - Research paper

1. Introduction

Green supply chain management (GSCM) is an important strategic objective for businesses who seek to realise the multiple benefits from such practices, including cost savings, stronger brand recognition and competitor differentiation (Brammer and Walker, 2011; Min and Galle, 2001; Roehrich et al., 2014; Sarkis et al., 2012; Vachon and Klassen, 2008). A central part of GSCM is the selection of 'green' suppliers and suppliers' willingness to contribute towards GSCM, which have so far received limited comprehensive theoretical and empirical attention in a single study, despite several frameworks emphasising their roles in achieving sustainable supply chain management practices (Govindan et al., 2013). Nevertheless, extant studies have not yet unpacked the complexity inherent in green supplier selection and supplier motivation to drive GSCM from a dyadic upstream supply chain (SC) perspective.

This study focuses specifically on GSCM practices and adopts the definition of GSCM as "the management of material, information and capital flows as well as cooperation among [companies]" of the environmental issues that are "derived from customer and stakeholder requirements" (Seuring and Mueller, 2008, p. 1700). Existing research has been instrumental in emphasising how GSCM is contingent upon and driven by a number of internal and external factors. For example, Walker et al. (2008) observe that previous work has suggested that GSCM is driven by internal factors such as employees, strategy and values. In addition, they observe a number of external drivers, such as regulation, customer expectations, competition and wider social expectation. This body of literature (e.g. Amann et al., 2014; Rao and Holt, 2005) has furthered our understanding of the elements that are needed to implement GSCM, but the focus has predominately been from a buyer's or a buyer-first-tier supplier perspective. Much of this work has also emphasised the 'fit'

between buyer and first-tier supplier and their ability to work together (Blome et al., 2014), neglecting GSCM issues further up the supply chain such as the relationships between first-tier and second-tier companies. Investigating upstream parts of the supply chain is important to realise GSCM beyond the buyer-supplier dyad, encompassing the wider supply chain. A focus on dyads further up the supply chain also uncovers some of the key issues less resource rich companies, mainly small- and medium-sized enterprises (SMEs), need to address when seeking to implement GSCM practices.

GSS is at the heart of GSCM because regardless of internal and external drivers of GSCM, it is ultimately contingent upon the supplier's willingness, motivation and ability to adapt and collaborate with supply chain partners to drive GSCM performance. In contrast to the majority of prior GSCM studies, this study does not assume that upstream suppliers are automatically adopting supply chain partner's GSCM perspective, but seeks to explore the factors contributing towards second-tier suppliers' willingness to drive GSCM performance. Therefore, we deploy the self-determination theory (SDT) to better understand how to relate contextual conditions, such as characteristics of GSCM practices as driven by the down-stream supply chain partner (i.e. first-tier supplier, buyers, customers), to value internalisation at the upstream suppliers (i.e. second-tier suppliers) (Deci and Ryan, 2000; Weibel, 2007). Value internalisation, characterised by the degree to which suppliers have identified and accepted down-stream SC partner's values with regards to GSCM, offers a more comprehensive picture of GSCM activities and performance. Thus, we investigate and bridge two distinct, but interrelated, research streams of GSCM: (i) green supplier selection; and (ii) supplier motivation and value internalisation. In so doing, we explore two research questions: (i) To what extent does green supplier selection from a first-tier supplier's perspective drive green supply chain management performance?; and (ii) To what extent is

the realisation of improved green supply chain management performance contingent upon SDT mechanisms of autonomy, competence and relatedness at second-tier suppliers? We explore these questions through an in-depth case study drawing on rich primary and secondary data from the aerospace industry.

We make three distinct contributions. First, this is a theoretical and empirical study into the role of supplier selection from a first-tier supplier's perspective in improving GSCM practices. In so doing, we respond to calls in the existing literature (Hoejmose et al., 2013), and offer a significant contribution to our understanding of how to improve environmental performance further upstream in the supply chain. Second, we view the selection of 'green' suppliers (from a first-tier supplier's perspective) as part of a firm's wider supply chain activities. Through the lens of SDT we investigate the value internalisation at second-tier suppliers to realise GSCM. This perspective also considers the challenges faced by SMEs further up the supply chain when seeking to adopt GSCM practices initiated further down the supply chain. We investigate two major building blocks - supplier selection and supplier motivation - that are required for improved GSCM performance. Hence, our study offers a holistic perspective of this process, moving beyond the buyer-supplier dyad. Third, our analysis is based on a first-tier manufacturer of aerospace parts that operates in the B2B sector. This allows us to capture a new and interesting perspective of the extent to which a first-tier supplier's practices are driven by downstream pressures of buyers (i.e. Original Equipment Manufacturers (OEMs)) and the extent to which these are passed on to and internalised by second-tier suppliers.

The remainder of the paper is structured as follows: In the next section we critically assess extant studies on GSCM, supplier selection and SDT, before positioning an initial conceptual framework. Section 3 outlines the research methods, before section 4 presents

industry and company background of this study. Key empirical findings are also presented in section 4. Then, findings are discussed in light of extant literature to derive insightful theoretical and managerial implications, before outlining limitations and avenues for further research.

2. Conceptual development

2.1 SCM relationships to drive GSCM performance

Over the last decades, increasing global competition in the aerospace sector and beyond has forced firms to offer low cost, high quality and reliable products with greater design flexibility. Manufacturers have come to realise the potential benefits and importance of cooperative relationships, calling for a wider supply chain management approach (e.g. Carter and Ellram, 2003; Tan et al., 2002). The complex nature of many transactions, especially when trying to drive green supply chain management activities across a firm's supply chain requires the formation of long-term supply relationships. GSCM is concerned with processes (Klassen and Vereecke, 2012) and tools (Pedersen and Andersen, 2006) which companies deploy in order to implement GSCM practices and drive performance (Awaysheh and Klassen, 2010; Grosvold et al., 2014). These includes, for instance, codes of conduct, third-party certification, and rewards and sanctions (Chen, 2005; Pedersen and Andersen, 2006).

In some of the earliest work on the topic, Lamming and Hampson (1997) note that GSCM is not only about managing risks – including consumer boycotts and negative media attention – but also about realising opportunities that can add value to the company, including cost efficiencies and brand differentiation. More recent work has supported such observations (e.g. Wiengarten et al., 2012; Zhu et al., 2008). For example, Rao and Holt

(2005) found that GSCM leads to greater levels of competitiveness and economic performance. As such, GSCM performance is an indicator of the degree to which sustainable practices are embedded within the company and across the supply chain. Prior studies of GSCM have, for example, investigated the importance of collaboration (e.g. Simpson et al., 2007) and risk management techniques (Carter and Rogers, 2008). However, as noted by Genovese et al. (2013), such benefits are difficult to realise unless a company actively selects suppliers based on sound environmental criteria. Moreover, it is vital for companies to understand to what degree upstream SC partners identify and accept values with regards to GSCM. Prior studies on GSCM have mainly focused on an individual organisation (e.g. Lee et al. 2014) or buyer-supplier relationship (e.g. Hoejmosse et al., 2014) as the unit of analysis, neglecting the importance of GSCM and green supplier selection from a first-tier supplier/second-tier supplier perspective (Klassen and Vereecke, 2012). This study focuses on inter-organisational relationships between a first-tier supplier and its key suppliers' engagement with GSCM practices.

2.2 Green supplier selection

The topic of 'supplier selection' has attracted extensive research over the last decades (De Boer et al., 2001; Sawik, 2010). Supplier selection involves the evaluation and selection of suppliers based on a number of criteria, such as price, flexibility, quality and delivery (Bhutta and Huq, 2002). However, much less conceptual and empirical attention has been paid to the topic of 'green' supplier selection. This is surprising as GSCM is one of the most important challenges for supply chain practitioners who increasingly have to accommodate and response to pressures for improved environmentally responsible supply chains (Brammer et al. 2011; Walker et al., 2008). The problems are exacerbated by the scope of

global supply chains, and particularly the high-level of sourcing taking place from countries with weak or poorly enforceable regulatory frameworks (Millington et al., 2006).

Therefore, the emergence and increasing awareness of GSCM requires a reframing of traditional supplier selection criteria, to account for the additional complexity associated with environmental management. This complexity arises for several reasons. For example, when considering the environmental impact of supply chain management, the timescales are often longer and the interactions between individual variables are more complex as the decisions will include more intangible factors (e.g. reputation, CSR and social impact). In turn, this requires many trade-offs with regards to environmental and economic factors (Sarkis et al., 2012). As such, it has been argued that there is a set of unique challenges when it comes to implementing GSCM (Genovese et al., 2013). For instance, environmental factors are often difficult to measure precisely and there is a lack of transparency on environmental issues by suppliers, as buyers are often not allowed closer access to suppliers' environmental management systems.

However, these challenges have not stopped many companies from developing explicit goals relating to their aim of minimising the negative impact their operations have on the environment. Indeed, many firms have seen the selection of suppliers to be the key in minimising costs of implementing 'green' supply chain practices and simultaneously achieve their environmental supply chain goals (see Govindan et al., 2013). In response to these challenges, a few scholars have developed multi-criteria tools that consider qualitative and quantitative measurements to support supplier selection decisions (Wu et al., 2010). These multiple-criteria decision tools have the purpose of simplifying the decision-making and offer the opportunity to balance a variety of often conflicting criteria (Sarkis and Talluri, 2002). Tools include analytical hierarchy process (AHP), analytical network process (ANP),

data development analysis (DEA), case based reasoning (CBR), and mathematical programming (Govindan et al., 2013). Despite this body of research, which has provided insights into the complexity of 'green' supplier selection, it is widely recognised that whereas general supplier evaluation and selection decisions are routine for many large companies who have highly visible operations for stakeholders, only a few companies have developed a methodology for adding environmental issues in their decision-making process for supplier selection (e.g. Sarkis and Talluri, 2002; Testa and Iraldo, 2010). Handfield et al.'s (2002) study, for example, highlighted that the biggest problem was the complexity of decision rules, appropriateness of various matrices and the relative weight of the various 'greenness' criteria.

A related, but externally verified, tool that is frequently adopted in pursuit of GSCM is third party certifications such as environmental (e.g. ISO 14001) and social (e.g. ETI, SEDEX) initiatives. These initiatives may generate transparency and legitimacy, thus potentially leading to benefits such as cost reductions (Carter and Rogers, 2008) or offering differentiation to competitors (Preuss, 2009). More recent work has also been specific in emphasising the use of these standardised tools, such as ISO certifications (e.g. Bansal and Roth, 2000), and today it is perhaps the most widely used criterion for GSS (Testa and Iraldo, 2010). However, focusing specifically on ISO 14001 as a way of selecting 'green' suppliers can be risky as it is fundamentally a certificate that verifies that suppliers have an environmental improvement process in place. This process, however, will be dependent on the industry and the company itself. For example, a new company will have fewer criteria and goals compared to an established company which has already gone through an extensive environmental management process – yet, both companies could be ISO 14000 certified, whilst their actual environmental management activities and processes might be

very different, because of different firm-specific resources by operating in different industries with particular environmental challenges. Further, prior studies have argued that ISO 14001 may not be appropriate for global supply chains, where suppliers in different countries are subjected to different regulatory and institutional frameworks, and because of concerns that such certifications may be obtained in some 'dark back alley' (Millington et al., 2006).

2.3 Value internalisation

While it is vital for supply chain partners to select green upstream partners in order to realise GSCM activities and performance across the supply chain, upstream partners' motivation (i.e. value internalisation) needs to be considered too. While prior GSCM studies investigated buyer-supplier relationships and issues such as barriers and drivers for GSCM practices, it would miss the inherent complexity of engaging suppliers, which very often are SMEs with limited resources further up the SC, to assume that they are plainly willing to engage in GSCM practices. The degree to which second-tier suppliers have identified and accepted a downstream SC partner's (e.g. first-tier supplier's) values with regards to GSCM practices is vital in order to realise GSCM practices and drive GSCM performance across the SC. Strong value internalisation promotes reliable and trustworthy behaviours (Weibel, 2007). In the context of GSCM, second-tier suppliers are vital to embrace and drive GSCM practices. In order to explore upstream suppliers' willingness to engage with GSCM practices, this study follows the tradition of Deci and Ryan (1985) who developed the self-determination theory, explaining: (i) why contextual conditions (e.g. external drivers and a SC partner's approach to GSCM) undermine or strengthen value internalisation, and (ii) what contextual conditions conducive to value internalisation look like. Support for self-

determination, driven by contextual conditions that satisfy three innate needs: (i) autonomy, (ii) competence, and (iii) relatedness (Ryan, 1995), is theorised to predict the degree of value internalisation (Weibel, 2007). More specifically, the innate need of autonomy is central to the ability to actively transform external factors (e.g. regulations) into inner principles which in turn will motivate employees and companies to drive certain GSCM activities. Autonomy is vital to drive commitment to, for instance, supply chain wide GSCM practices. In other words, externally initiated practices and activities are adopted and endorsed by the company as being of one's own initiation. SC practices, for example, might be adopted because the upstream supplier finds interest and sees value in a particular GSCM practice. Feeling autonomous stands in stark contrast to controlled motivation where the upstream supplier might feel pressured and controlled by downstream SC partners, thus quite often may react with ambivalence (Silva et al., 2014). Competence is vital to experience effectance and effectiveness. More specifically, it is vital for supplier further upstream to feel competent in realising GSCM activities and meet GSCM performance targets. Lastly, the innate need of relatedness is crucial to feel connected to others (Deci and Ryan, 2000). More specifically, upstream suppliers need to feel to be a vital part of the supply chain and having a strong relationship with the first-tier supplier before adopting GSCM practices. As stated by prior STD studies, autonomy is supported by a context that provides opportunities of choices; competence is supported by positive feedback and non-controlling information; and relatedness is supported by a context characterised as signalling care and cooperation between first-tier and second-tier suppliers (e.g. Silva et al., 2014). SDT positions these three needs as universal necessities that are essential for optimal development and taken together may help to explain the motivational dynamics behind uptake (or non-uptake) of and engagement with GSCM practices in upstream parts of the

SC, hence driving GSCM performance. Previous SCM and particularly GSCM studies have not yet adopted an SDT perspective to explore GSCM uptake further up the supply chain, thus this study offers a new perspective on upstream GSCM activities and performance.

In other words, SDT offers a relevant new theoretical perspective to better understand how to relate contextual conditions, such as characteristics of GSCM practices as driven by the down-stream supply chain partner, to value internalisation at the upstream suppliers. Adopting a SDT perspective helps to go beyond the mere assumption that suppliers further up the supply chain will automatically adopt and engage with GSCM practices. Our study, through the theoretical lens of SDT, does not take a supplier's adoption of GSCM practices initiated further up the supply chain for granted, but investigates the key components of value internalisation that need to be in place to realise GSCM activities further up the supply chain, hence driving GSCM performance.

2.4 Positioning an initial conceptual framework

Our conceptual framework is illustrated in figure 1. The framework builds on existing research which has suggested GSCM is contingent upon more general and traditional supply chain management activities of the firm (e.g. Brammer et al., 2011). This relation is necessary because GSCM rests upon many of the same principles as more traditional supply management does, including supplier selection, relationship management, tracking of performance, monitoring and quality assurance of suppliers' processes. Once the firm has made a strategic decision to 'green' its supply chain, this will influence their supplier selection criteria. Specifically, as supply chain management involves the selection of appropriate suppliers which are selected based on firm-specific criteria, usually involving terms and conditions centred around price, quality and flexibility, if the firm's aim is to

improve the 'greenness' of its supply chain, these criteria will also have to involve criteria around environmental management (Tseng and Chiu, 2013). Thus, existing supplier selection criteria will influence the criteria for 'green' supplier selection as there may be trade-offs between the traditional factors (e.g. price) and the desire to improve the environmental position. A final element of our framework is that firms are rationale agents, hence will only engage in 'green' activities if there is a clear motivation for doing so (Hoejmose et al., 2014). Therefore, the transition of incorporating 'green' into existing supply chain practices across a supply chain relationship will also be contingent upon the degree of value internalisation by the SC partner.

Please insert 'Figure 1' about here

3. Methods

3.1 Research approach and sampling

The research deploys an abductive research approach through an exploratory, in-depth empirical case study (Siggelkow, 2007; Voss et al., 2002; Yin, 2003). Two of the authors collected primary and secondary datasets to test the initial conceptual framework in an effort to refine and elaborate theory (Ketokivi and Choi, 2014). The research is based on an in-depth case study of a German aircraft interior company (a first-tier supplier to leading aircraft manufacturers) and its six key suppliers (second-tier companies), investigating GSCM, supplier selection and value internalisation at lower-tier SC relationships in the aerospace industry. The case was selected because the focal company involved is recognised as having achieved high standards of GSCM in the aerospace industry and we were allowed unique access into a highly regulated market.

A single, embedded case study design enabled us to achieve depth and detail in the investigation of green supplier selection and value internalisation to drive GSCM practices and performance across a supply chain in the aerospace industry. It also allowed us to capture in detail the context surrounding the phenomenon (Barratt et al., 2011). Moreover, we investigated an 'extreme' case, where the phenomenon of interest (GSCM activities and performance) had a high degree of visibility and which offered ample opportunity to learn (Binder and Edwards, 2010; Stake, 2010; Yin, 2003) as AIR was acknowledged industry wide (e.g. Crystal Cabin Award, Reddot Award and German Design Award) for its green initiatives.

3.2 Data sources and analysis

From 2013 to 2015, 18 in-depth, semi-structured interviews were conducted, lasting each between 60 to 120 minutes (Appendix A - Record of fieldwork). Primary data were triangulated with secondary data such as company material, industry reports and press clippings to strengthen external validity. The interviewees were categorised into three groups: (i) individuals from multiple levels of the organisational hierarchy such as Commodity Supervisor and Director of Quality and Process Management; (ii) individuals from different functional areas such as operational and strategic management; and (iii) individuals from one focal firms (first tier supplier) and six international suppliers based in China, Germany, UK and USA. In order to increase construct validity, we deployed different remedies: using multiple sources of evidence, interviews across the dyad, and having key informants review the case report in-depth (Gibbert et al., 2008).

Interview descriptions were produced and initial findings were presented in a 30-page case report which formed the basis for subsequent discussions with key informants to ensure consistency and correctness. Interviews and their analysis was extensively discussed

by the research team to further enhance validity. The data was open, axial and selective coded, summarised and displayed in an iterative fashion (Miles and Huberman, 1994). Axial coding focused on a single category such as green supplier selection and supplier motivation at a time, supporting the process and uncovering connections between concepts under study (Strauss, 1987). Information repetition and ongoing verification of our understanding during data collection indicated that we had reached saturation. Codes emerged from both the literature review and the structured interview process, and were revised during the coding process.

4. Findings

4.1 The aerospace sector and case companies

The aerospace sector and the case companies were chosen for a study of inter-organisational relationships within a single sector for a number of reasons. First, its relatively slow clock-speed (i.e. referring to the rate of its evolution - Fine, 1999) and long programme cycles indicate that investigated companies and inter-organisational relationship were likely to remain in existence during the course of the research and would provide insightful case data that could be observed and analysed at a supply chain (e.g. wider drivers of GSCM) and (inter-)organisational level (i.e. supplier selection and value internalisation). Once an aircraft has been developed and approved by the relevant authorities (e.g. the Federal Aviation Authority (FAA) in the USA or the Civil Aviation Authority in the UK) it quite often is in service for over three decades.

Second, once granted access to aerospace case companies, these cases quite often are rich sources of case material as companies in the sector frequently have intricate supply relationships. Also, the aerospace supply chain can be broadly represented as consisting of

multiple tiers. 'OEMs' or 'Primes' are responsible to manufacture airframes to which all other components and systems are attached (Williams et al., 2002). First-tier companies mainly represent the manufacturers and integrators of aerospace systems and large components and may include manufacturers of landing gear systems and fuel computer systems. Second-tier companies encompass the manufacturers and suppliers of components and consumable items, such as machined parts. This tier consists predominantly of small and medium sized enterprises (SMEs). Our study focuses on a first-tier company (i.e. a key supplier to OEMs) and its key suppliers (second-tier companies).

The aircraft manufacturing industry is regulated by governments and authorities such as the EASA in Europe, the FAA in the US and the IATA (EASA, 2015). The focal case company, AIR (disguised due to confidentiality), is a global first-tier supplier of premium aircraft seats for leading aircraft manufacturers, offering seats for economy and business class cabins for short to extra long-haul flights. AIR's unique selling point is centred on offering ingenious design, ergonomic and lightweight construction, quality, durability and easy maintenance (AIR, 2015). The company employs more than 2,000 people and generated sales of more than Euro 300 million in 2014 (AIR, 2015). AIR's headquarter is based in Germany and the company is currently in the process of building a '*more global supply chain*' by operating plants in, for instance, USA and China.

In April 2013, AIR was awarded by the German news channel NTV a "hidden champion" in the sustainability category for the third consecutive time, making AIR an ideal candidate for an in-depth case analysis (NTV, 2013). AIR was praised for their focus on efficiency and cost effectiveness of their seats using state-of-the-art materials, ingenious designs and reducing weight of the seats, supporting airlines in their efforts to operate ecological and economical flights (NTV, 2013). AIR's six key suppliers are based in China,

Germany, UK and USA. The UK-based key supplier (S1) produces seat cushions for AIR. Three other suppliers (S2-S4) are based in the US and produce precision sheet metal, fasteners and seat cushions respectively. The Chinese supplier (S5) produces metal structural parts while the German supplier (S6) delivers a range of different foam products. The suppliers are all SMEs with not more than 500 employees. All suppliers were also selected by AIR based on green criteria and possible opportunities to further drive GSCM practices. More details about the investigated buyer-supplier relationships such as dependence and length of relationship involvement can be found in Appendix B.

4.2 GSCM practices and external factors

This section briefly considers the external factors that drive GSCM practices uptake further upstream in the supply chain. Interestingly, interviewees from AIR and its suppliers recurrently pointed out that *“green attributes received hardly any attention twenty, maybe even ten, years ago”* (Head of Operations, AIR) but that GSCM practices are becoming increasingly more important as downstream buyers and customers (aircraft manufacturers, airlines and its customers) are more and more aware of the effects on personal and business life. The Director for Quality and Process Management (AIR) stated that the focus of the company is *“a supply chain that creates sustainable products and is running the organisation and supply chain in a sustainable way. In the past, we mainly focused our green efforts on our European and US suppliers, but we now include also our suppliers from China.”*

This quote underlines that initial GSCM practices quite often initiated from AIR and were then realised in a joint effort with European and US suppliers. However, increasing pressures to include the whole supply chain let AIR *“to rethink of how best to approach GSCM practices”*. Interviewees repeatedly mentioned three external factors that mainly

drive the uptake of GSCM practices: (i) wider industry (competition); (ii) expectations of downstream buyers and customers; and (iii) compliance and regulations. The wider aerospace industry was seen as *“crucial to install green practices to effectively compete against other supply chains”* (Director of Supply Chain, S1). Also, AIR reported that they *“felt the pressure from further down the supply chain, our buyers and their customers, expect us to be more sustainable. It helps their competitive advantage and these pressures and expectations are passed on to us and we need then to see how to deal with them”* (Head of Supply Chain Coordination, AIR). However, AIR interviewees explained that *“customers are at times expecting the impossible to come true in a very short time”* with regards to GSCM practices (Commodity Supervisor, AIR). Moreover, sustainability legislation and compliance were seen as driving certain GSCM behaviour, but were also seen by interviewees to be *“sometimes very challenging”* and not all policies *“are driving you to the same goal”* (Vice President Supply Chain, S6).

AIR interviewees discussed that the key focus with regards to GSCM practices, driven by key external factors, can be segmented in mainly three categories: (i) product features; (ii) organisation and its processes; and (iii) catalytic effect. The first categorisation is related to the value-adding product features. On the one hand, there is a need to optimise logistics and packaging in a resource efficient way using a direct route. The exchange of disposable cardboard shipping boxes to re-useable metal shipping containers serves as an example. On the other hand, recycling and re-use was emphasised as being key in achieving GSCM performance targets. The Director of Process Improvements (S4) stated that: *“Our waste is collected and recycled as this ‘scrap foam’ is in demand since it is utilised in the floor underlayment industry.”* Additionally, the protection of resources which is associated with energy savings and avoidance of hazardous materials was mentioned regularly in relation to

GSCM. All interviewed employees of AIR agreed that GSCM starts during the design phase and that *“early supplier involvement [ESI] was key for us to achieve ‘true’ green supply chain management”* (Senior Manager, AIR). Throughout new product development, engineers need to *“take the effect of the product as well as the manufacturing processes into account”* (Commodity Supervisor, AIR). This leads to the assessment of the environmental impact across the product lifecycle. This may indicate that more resources must be utilised at the beginning in order to reduce the environmental impact over the complete lifecycle. *“I think that most of our suppliers did realise that recycling is key. For example, our Chinese supplier did need a bit more convincing. For them recycling was new and we needed to work extensively with them to explain why it was needed. I think there is more of a tradition and legacy regarding ‘green activities’ in Europe and the US when compared to our Chinese suppliers”* (Head of Operations, AIR).

The second categorisation is associated with the management processes and how ecologically the focal company is run and how these processes could be passed on to suppliers. Recycling of general office waste such as paper, food waste and plastics was considered as being green as well as saving water in the washrooms by installing sensors and installing solar panels to generate energy. These practices initially started out at AIR, but were with the help of joint working meetings spread across AIR’s key suppliers. *“It was initially noticeable that the majority of our suppliers, actually mainly our European suppliers, were trying to save energy and recycle their waste, whereas only we [AIR] went further by making greater investments such as setting up solar panels or an osmosis plant”* (Head of Supply Chain Coordination, AIR). Over time, *“some fruitful joint initiatives were set up to help us along in becoming more sustainable as a firm and supply chain”* (Senior Management, S6). *“Reflecting on our processes a few years back, we need to be honest and*

say that we were not really green when compared to our European partners. [...] AIR has helped us a lot to realise more of our 'green potential'" (Head of Supply Chain, S3). The catalytic effect of GSCM concerns the third categorisation, which relates to the effect of a sustainable product on the environmental effect of the end product – the aircraft. The overall product weight needs to be considered carefully as aircraft manufacturers and airlines alike are demanding products which are as light as possible to save fuel and *"promote a sustainable image to their customers. I think we (AIR) as first-tier suppliers noticed it first. It then trickled down the supply chain until we realised, a few years back, to be much more proactive and tell our key suppliers that weight reduction is key and that we all have to work together. When the material comes to us, it is almost too late to really change the weight"* (Director Innovation, AIR). This links to the life-cycle assessment of the products which *"allows us a calculation of how much kerosene can be saved compared to competitive products. I think our European suppliers did understand their impact almost immediately and worked with us. However, our US and Chinese suppliers needed more details and convincing to jointly work with us on weight reduction. We did not threaten them to take business away, but showed them evidence of how weight reduction can help our customers, us and them"* (Head of Supply Chain Coordination, AIR). While AIR as a first-tier supplier has direct contact with aircraft manufacturers and airlines and *"is clearly incentivised to drive green supply chain management"*, GSCM practices further up the supply chain needed quite often *"a strong hand holding from [AIR] in the early stages to be realised"* (Head of Operations, AIR).

4.3 GSS and GSCM performance

Across AIR interviewees, there was a consensus on supplier selection criteria. The *“most important factors are price, quality and delivery”* (Senior Manager, AIR). Furthermore, established relationships and past experiences regarding, for instance quality issues, are taken into account. However, the Head of Supply Chain Coordination (AIR) stated that *“criteria such as carbon dioxide emission, usage of hazardous materials such as bromine and other heavy metals, and environmental management systems are key for our green supplier selection approach.”* AIR interviewees emphasised the importance of ISO 14001 certification as *“a significant tool to measure the environmental activeness of suppliers”* (Director of Quality and Process Management, AIR) since it is considered to be *“built on strong foundations”* (Director of Innovation, AIR) which are proven and checked regularly. The Commodity Supervisor (AIR) underlined that such certificates are of *“certain value”* when selecting suppliers, however also noted that *“most of our SME suppliers cannot afford this certification and we need to look for other criteria and indicators”*. Apart from the China based supplier, none of the other suppliers were in possession of the ISO 14001 certificate. *“I think our Chinese supplier realised quite early on in our relationship that they had to make fundamental changes if they wanted to become a key supplier and be involved in GSCM practices. The certification process was initiated relatively quickly from their side. We told them that this is a vital step towards becoming a trusted ‘green supplier’, but that this would not be the final step and that more needed to be done”* (Head of Operations, AIR).

Interviewees at AIR and its European and US suppliers stated that they jointly investigated the requirements of ISO 14001 and decided to jointly adopt measures that improve economic efficiency and drive GSCM such as reduction of energy consumption and waste. Interestingly, the Chinese supplier (S5) indicated that the ISO certification is inevitable when attempting to receive a contract from European companies and felt *“forced into holding this*

certification” (Director of Supply Chain, S5). These statement indicates that the less regulated in terms of GSCM activities a country is, the more there is a need to rely on certificates to *“showcase sustainable behaviour such as design for environment, environmental management systems and environment competencies”* (Director of Supply Chain, S5).

The supplier selection process and technique for new suppliers relies on scoring cards and evaluations. At present, environmental activeness is part of this process, but AIR interviewees further mentioned that *“this part will further grow over the next years”* (Director of Quality and Process Management, AIR). In general, it must be differentiated between new supplier approval and legacy supplier selection for GSCM practices. During new supplier approval process, the potential supplier has to satisfy and comply with strict requirements and standards, sign general supply and quality assurance agreements and confirm financial stability. Suppliers’ plants are visited to inspect the processes currently in place and sample parts are required for further comprehensive quality checks. In contrast to new supplier selection, legacy suppliers are audited on a regular basis and selected for joint GSCM initiatives to drive GSCM performance. *“It is important to distinguish your processes for new and established suppliers. [...] Established suppliers are selected to work on joint SC greening initiatives. We clearly draw out the benefits for a supplier to work with us on a particular green initiative. Most initiatives are cost saving in the long-run and this is vital to jointly drive up green performance across the supply chain”* (Head of Operations, AIR).

AIR’s long-term ambition is to *“green the complete global supply chain”* and interviewees emphasised that key suppliers *“play a vital role on this journey”* (Director Innovation, AIR). Interviewees argued that *“it was only when we introduced ‘green attributes’ as part of the supplier selection decision making process that we really signalled*

to our suppliers to pay attention to GSCM. Although you can invest money upfront and push for GSCM practices, if suppliers are not convinced and you are not working with them hand-in-hand, it is not going to happen" (Senior Manager, AIR). The implementation of a GSCM strategy was integrated in the overall corporate strategy including sustainability issues such as life-cycle assessment, light weight and ecological innovations. In order to implement GSCM activities successfully, awareness needed to be raised externally, beyond the immediate key suppliers. For instance, external communication included press releases to inform customers and buyers. Furthermore, a life-cycle cost assessment study was presented at the Aircraft Interior Expo in 2011 and was nominated for the Crystal Cabin Award (AIR, 2015). Apart from awards won by AIR for its GSCM activities and practices, interviewees emphasised *"the positive economic implications in the long-term, something that really helped us to convince some more stubborn suppliers to work with us on GSCM practices"* (Head of Supply Chain Coordination, AIR). After an initial investment and strong efforts to realise GSCM practices within the organisation but also across AIR's key suppliers AIR's market share *"has grown significantly and we are now recognised by manufacturers and airlines alike for our 'green drive'. Again, this is a great selling point for us and for our suppliers working with us"* (Director of Quality and Process Management, AIR). Interviewees emphasised the positive impact of green supplier selection on *"our own reputation and CSR/firm strategy"* (Senior Manager, AIR). However, the Director of Innovation (AIR) cautioned by stating: *"We [AIR and its suppliers] have come a long way, but the journey is definitely not over yet. There needs to be further transparency with regards to measures and our suppliers' suppliers are not as thoroughly checked as our key suppliers."*

4.4. Value internalisation and GSCM performance

The key findings for this section are presented in Table 1 along the key dimensions: (i) autonomy; (ii) competence; and (iii) relatedness. Based on the three key dimensions relating to self-determination theory, empirical findings support the establishment of sub-dimensions which are crucial to realise second-tier supplier 'buy-in' and thus drive GSCM performance. It should be noted that the European suppliers S1 and S6 (i.e. UK and Germany) exhibited all of the identified sub-dimensions and were seen by AIR as *"the two suppliers which were vital to realise GSCM practices across our supply chain. Both suppliers were keen to jointly work with us from the start"* (Senior Manager (Strategy), AIR). The remaining inter-organisational relationships with key suppliers exhibit all of the sub-dimensions of autonomy (i.e. relevance, respect and choice, balanced use of control) and at least one sub-dimension for each of the other two dimensions. The Chinese and USA suppliers are considered by AIR *"as vital green partners in developing GSCM practices, but for which we have to still invest more resources to 'lift them up to the level of the two European suppliers'"* (Director of Innovation, AIR).

Interviewees at the second-tier suppliers emphasised that autonomy is related to *"feeling of being in control or at least have a substantial saying in what happens in your own firm and across the supply chain"* (Senior Manager, S1). Across suppliers, interviewees emphasised the importance of AIR providing *"clear rationales of why, when and how green practices should be realised. If you do not have this in place first, building competence and building strong 'green inter-organisational relationships' would not really work"* (Director of Operations, S2). Autonomy and its sub-dimensions were seen as building the *"basis for any further 'green' discussions and GSCM activities"* (Head of Supply Chain Coordination, AIR). In addition, AIR *"avoided to force its suppliers to sign-up for initiatives they did not completely buy-in to"* (Vice President Supply Chain, S6). All interviewees emphasised that

green supplier selection in combination with ensuring autonomy were the *“first crucial steps on the latter”* to achieve GSCM, but that it *“is definitely only the beginning and not the end to achieve high GSCM performance”* (Chief Operations Manager, S3).

Once suppliers are selected and autonomy via the three sub-dimensions was strengthened, *“joint workshops and competence building”* were important to *“keep GSCM alive throughout the relationship”* (Director of Process Improvements, S4). In order to successfully establish GSCM activities, suppliers’ employees needed to be sensitised for GSCM practices. AIR organised yearly “supplier days” which served as opportunities to exchange information and plan joint green activities, but also to help provide training and competence building opportunities. AIR’s Supply Chain Coordinator emphasised that: *“We [AIR] are more than happy to provide additional support in terms of training, visiting engineers and managers to support our suppliers in helping the whole supply chain to become more sustainable”*. Interviewees also emphasised the importance of AIR *“paying attention to our problems in realising green practices”* (Director of Supply Chain, S5). These ongoing exchanges between AIR and its suppliers helped to further strengthen relatedness as a vital dimension for value internalisation at AIR’s suppliers. Both dimensions, competence and relatedness, were further strengthened in parallel to build key green suppliers.

Interviewees across the key suppliers emphasised the *“pivotal role of AIR in making GSCM happen”* (Director of Operations, S2). Positive performance implications were mentioned by interviewees from AIR’s key suppliers: *“It helped to drive awareness across the supply chain. AIR is much further ahead with regards to green initiatives than us and our suppliers. This was surely driven by AIR’s customers further down the supply chain”* (Vice President Supply Chain, S6). *“For us, it helped to further grow our business and market*

share. We are now seen as contributing substantially to green SC practices” (Director of Process Improvements, S4). Interviewees from the suppliers also drew out the difference in regulation *“to drive sustainability behaviour”* (Chief Operations Manager, S3). While the UK, US and Germany based suppliers agreed that *“at least the minimum standard needs to be met”* (Director of Operations, S2), the Chinese supplier emphasised that *“there are very little regulations around sustainability and we are in the business to make money”* (Director of Supply Chain, S5). Both USA and China based suppliers agreed that it is *“mainly the European firms that drive sustainability awareness and activities”* (Chief Operations Manager, S3) and *“awareness is raised by European firms that demand environmental implications”* (Director of Supply Chain, S5).

Please insert ‘Table 1’ about here

5. Discussion

5.1 Driving GSCM performance through GSS and value internalisation

We find compelling evidence to suggest that green supplier selection in combination with value internalisation are crucial to drive GSCM performance. First, green supplier selection is vital for a focal company to not only select new suppliers, but also to audit legacy suppliers to drive GSCM performance. A rigorous supplier selection process for new suppliers based on scoring cards and evaluations is crucial to drive compliance with regulations. We find significant evidence to suggest supplier selection in the aircraft industry is still dominated by traditional purchasing criteria, such as price and quality, but that environmental criteria occupy an increasingly important role. When considering environmental credentials of their suppliers, companies often rely on third-party certifications such as ISO 14001. ISO 14001 is often a starting point for implementing ‘green’

supply chain practices, but as it is merely a certification of an environmental management process being in place, it lacks rigor and consistency across suppliers and is quite often not affordable for SMEs.

Interestingly, green supplier selection was not only reserved for new suppliers, but also executed across legacy suppliers through ongoing audits and joint initiatives. This was vital to select key suppliers to jointly set up new GSCM practices. GSS was also seen as “*a way to communicate the importance of green practices*”. Incorporating green supplier selection criteria is key to: (i) support compliance for new suppliers; and (ii) drive joint GSCM practices and ongoing GSCM improvements for legacy suppliers. Thus, green supplier selection is crucial from a focal company’s perspective to drive GSCM performance by engaging with new and legacy suppliers.

Second, adopting the theoretical lens of self-determination theory (Weibel, 2007), an under-utilised theoretical lens in extant GSCM research, the research investigates value internalisation at second-tier suppliers to realise GSCM. More specifically, findings show that focal companies interested in driving GSCM performance and reaping positive effects from GSCM practices need to consider value internalisation from their upstream SC partner’s perspective. While GSS is at the heart of GSCM, GSCM performance is highly contingent upon a supplier’s willingness, motivation and ability to adapt and collaborate with SC partners. Our findings illustrate that value internalisation offers a more comprehensive picture of GSCM activities.

Companies need to drive autonomy, competence and relatedness at the partnering company to achieve value internalisation. Autonomy, seen as the first key dimension to be developed before placing further emphasise on the remaining two dimensions, can be supported by providing clear rationales for GSCM practices combined with addressing SC

partner's interests in a non-threatening and motivational approach. Once autonomy was developed with key green suppliers, emphasis shifted towards activities driving competence and relatedness in parallel. Competence is underpinned by setting joint expectations and objectives for GSCM practices, offering timely and non-controlling informational feedback regarding progress and if needed support SC partners with guidance and capability development. Lastly, relatedness should be developed in parallel with competence to realise GSCM practices. Relatedness can be strengthened by paying attention to SC partner's needs and concerns, offering support to jointly address these and exhibit dependability in times of need. It is the combination of all three mechanisms that is vital to drive value internalisation, greater acceptance and active participation in and commitment to GSCM practice, hence driving GSCM performance. Suppliers which were considered key green suppliers encapsulated all sub-dimensions across the three core dimensions of autonomy, competence and relatedness. It should be noted that this an ongoing, timely and costly process and that key suppliers should be carefully selected (via green supplier selection), hence the importance of realising both GSS and value internalisation to realise GSCM practices.

Third, our analysis is based on a first-tier manufacturer of aerospace parts that operate in the B2B sector. This allowed us to capture a unique perspective of the extent to which a first-tier supplier's practices are driven by downstream pressures of buyers and the extent to which these are passed on to and internalised by second-tier suppliers. Findings illustrated that factors external to the dyadic SC relationship, for instance, the wider industry, expectations of buyers and customers, and compliance and regulations, have an impact on green supplier selection and value internalisation, and hence on GSCM performance. Interviews also revealed that GSCM can only *"reach further up the supply*

chain” if down-stream companies have the abilities and competence to drive GSCM practices.

5.2 Reposition a revised conceptual framework

This study offers a more nuanced view of how companies are greening their supply chains. It lays the emphasis on supplier selection in combination with value internalisation to drive GSCM performance, rather than the introduction of radical environmental programmes which suppliers, often SMEs, may not be able, willing or ready to adhere to. Findings show that companies need to distinguish between new and legacy suppliers with regards to GSS. Supplier motivation for GSCM uptake is driven by autonomy, competence and relatedness and is crucial to realise GSCM performance. Before developing competence and relatedness with key green suppliers, a key emphasise should focus on autonomy. This requires a much closer alignment of priorities of SC partners in order to achieve green SC benefits.

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5.3 Managerial implications

This study has several key implications for managers. First, while a rigorous assessment of ‘green credentials’ through scoring cards and evaluations is vital to check compliance for new suppliers, ongoing audits and joint initiatives with legacy suppliers are needed to drive GSCM performance. Findings illustrate the positive results of GSCM such as increased market share, cost savings and industry-wide recognition. Second, focal firms must realise the importance of motivating SC partners to realise GSCM practices and drive performance. Supply chain partners need to clearly understand how to relate contextual conditions to value internalisation at upstream suppliers. Value internalisation, as characterised by the

degree to which suppliers have identified and accepted down-stream SC partners' values with regards to GSCM, can be supported by autonomy, competence and relatedness. Activities should include clear rationales for GSCM practices, and encourage the supplier to voice their concerns and share their perspective on GSCM. Only once autonomy has been built up at the supplier, should the focal company drive competence and relatedness at the supplier. Our revised conceptual framework offers detailed insights into the importance of driving these three mechanisms, thus realising GSCM performance. Third, SC partners need to be aware of key external factors, for instance, wider industry, expectations from other SC partners, compliance and regulation, which will have an impact on the immediate dyadic relationship and the realisation of GSCM performance across the SC.

5.4 Further research avenues

We acknowledge the research limitations, some of which may serve as future research avenues. Further research should test the conceptual framework in a cross-sectional study to consider, for instance, regulations in other industries, firm size and product/service purchased and their impacts on key concepts under study. More specifically, other industries that produce high technology products, such as automobile or electronics, are likely have many broadly similar characteristics to the aerospace sector and this would facilitate cross-sector comparison. Alternatively, sectors with polar characteristics might be selected to test the extremes to which this study's conclusions might be generalised. In addition, key concepts would benefit from being investigated over time to address questions such as how mechanisms vital for value internalisation were established over time and how green supplier selection criteria may change over time.

6. Conclusions

The study offers theoretical and empirical examinations of how green supplier selection drives GSCM performance and how realisation of improved GSCM performance is contingent upon SDT mechanisms of autonomy, competence and relatedness. The study contributes to our yet incomplete understanding of how to drive GSCM performance in upstream parts of the supply chain. The study draws out the importance of green supplier selection, distinguishing between new and legacy suppliers, to drive GSCM performance. Through the lens of SDT, second-tier suppliers' motivation (value internalisation) to realise GSCM is investigated. GSS and value internalisation are crucial to improve GSCM performance in the upstream parts of the supply chain. Findings also illustrate how first-tier supplier's GSCM practices are driven by downstream pressures of aircraft manufacturers and customers and the extent to which these are passed on to and internalised by second-tier suppliers. As such, our study provides an empirical and theoretical assessment of two key GSCM components which emphasise both implications for research and practice to realise GSCM performance.

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Figures and Tables

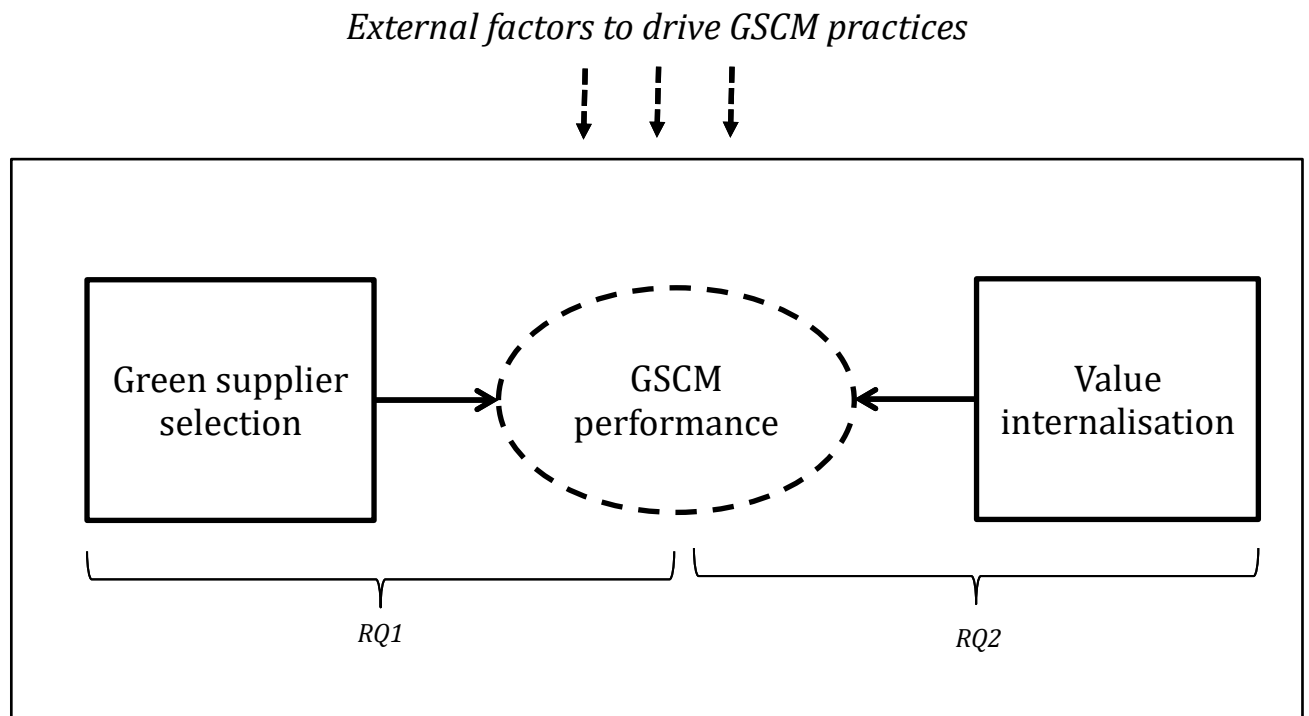


Figure 1 Initial conceptual framework

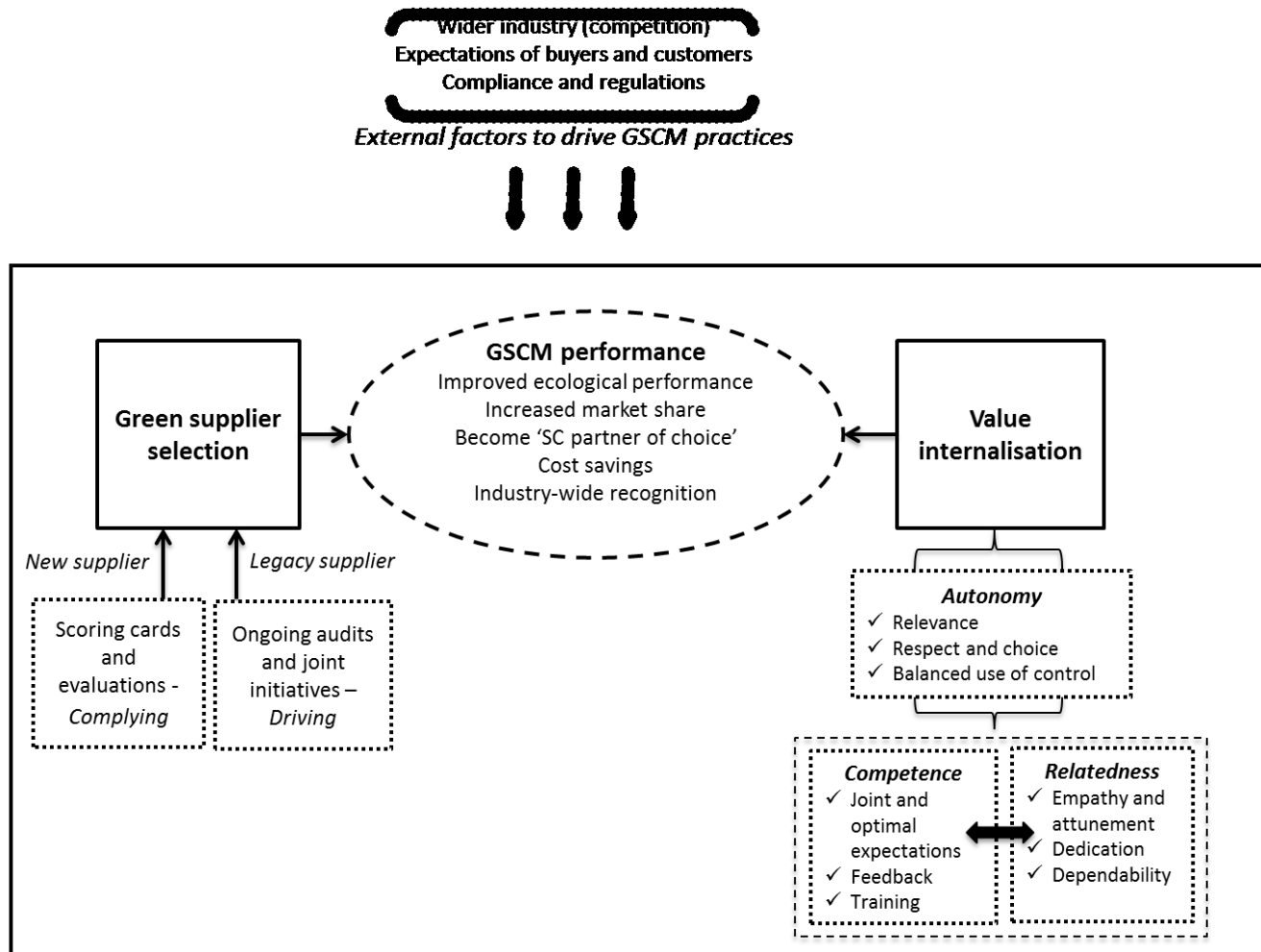


Figure 2 Revised conceptual framework

Dimensions	Representative quotes	Sub-dimensions	Brief explanation
Autonomy	<i>"AIR clearly specified what they wanted us to do and why it was needed regarding any sustainable practices."</i> (Senior Manager, S1)	Relevance	Provide a clear and meaningful rationale for GSCM practices/activities
	<i>"We always felt to be able to come to AIR and talk about our viewpoint. [...] I do not think that they ever not asked us to provide them with our perspective."</i> (Senior Manager, S6) <i>"Quite often we were asked to provide detailed input in how best to realise a GSCM activity. [...] We felt, we jointly owned the GSCM initiative."</i> (Director of Process Improvements, S4)	Respect and choice	Importance of supplier's perspective; encouraging suppliers to voice own interests and provide chances to incorporate suggestions
	<i>"Although we are aware of different external pressures such as compliance and regulations, we did not feel pressured or forced into GSCM practices."</i> (Head of Supply Chain, S6) <i>"Our firm was not bullied into any green practices."</i> (Chief Operations Manager, S3)	Balanced use of control	Avoid using coercive and authoritarian mechanisms
Competence	<i>"We sat at a table to discuss this new green supply chain initiative and made joint decisions about short- and long-term objectives for this initiative."</i> (Director of Operations, S2) <i>"It is important to set green targets which are realistic to achieve. [...] If you do not do this, you won't be very successful."</i> (Director of Supply Chain, S5)	Joint and optimal expectations	Setting joint and realistic objectives
	<i>"We always received quick and relevant feedback from AIR. [...] This really helped to build not only our competences, but also our confidence to be able to pull off GSCM initiatives and improve performance."</i> (Vice President Supply Chain, S6)	Feedback	Offering timely and clear feedback
	<i>"AIR is great in providing relevant training and support for our employees. [...] Green initiatives are fairly new to us and we still needed to develop relevant capabilities. This was done in a much more systematic and coherent way thanks to AIR."</i> (Head of Supply Chain, S3)	Training	Guidance and training support
Relatedness	<i>"AIR was very attentive to address any concerns we had with a particular green initiative. [...] This really helped to overcome initial internal resistance towards some of the initiatives."</i> (Senior Manager, S6)	Empathy and attunement	Paying attention to and gathering knowledge about the sub-suppliers' needs and concerns
	<i>"We clearly felt that green initiatives were important to AIR. They invested a lot of time and manpower to help us and to realise joint initiatives."</i> (Director of Process Improvements, S4)	Dedication	Offering time and resources
	<i>"Sometimes you need a strong helping hand which AIR provided. [...] We once were severely struggling to implement a GSCM practice with our suppliers. We really did not know what to do anymore. Luckily, [Head of Operations; AIR] came to our rescue. He offered further help in explaining to our supplier the benefits of that initiative and also helped them to develop the relevant capabilities."</i> (Director of Operations, S2)	Dependability	Availability in case of help/crisis

Table 1 SDT dimensions, representative quotes and empirical sub-dimensions

Appendix A – Record of fieldwork

#	Case company	Interviewee position	Experience in the industry / years with case company	Interview length (mins)
1	AIR	Director of Innovation	21 / 12	78
2	AIR	Director of Quality and Process Management	18 / 14	115
3	AIR	Head of Supply Chain Coordination	25 / 8	118
4	AIR	Head of Operations	14 / 11	88
5	AIR	Commodity Supervisor	12 / 5	107
6	AIR	Senior Manager (Strategy)	19 / 14	120
7	AIR	Director of Innovation	21 / 12	85
8	AIR	Head of Supply Chain Coordination	25 / 8	120
9	AIR	Head of Operations	14 / 11	105
10	S1 (UK)	Director of Supply Chain	28 / 15	85
11	S1 (UK)	Senior Manager	17 / 6	103
12	S2 (USA)	Director of Operations	10 / 10	96
13	S3 (USA)	Head of Supply Chain	17 / 5	108
14	S3 (USA)	Chief Operations Manager	21 / 11	75
15	S4 (USA)	Director of Process Improvements	6 / 6	117
16	S5 (China)	Director of Supply Chain	10 / 10	84
17	S6 (Germany)	Vice President Supply Chain	23 / 6	85
18	S6 (Germany)	Senior Manager (Strategy)	17 / 8	105
Overall interview:				1794 (29.9h)

Appendix B – Further case company details

Case companies relationship	Length of relationship	Supplier's product	Percentage of AIR's spend for the relevant supply category with the supplier in %*	Percentage of overall supplier's product sales going to AIR in %*	Further relationship details
AIR - S1 (UK)	12	Seat cushions	48	45	<ul style="list-style-type: none"> • Long standing relationship with a key green supplier • First supplier to be selected by AIR to work on joint GSCM practices • Very close working relationship and joint GSCM initiative and workshops
AIR - S2 (USA)	8	Precision sheet metal	55	35	<ul style="list-style-type: none"> • Long-term relationship with high spend by AIR with this supplier • Trusting relationship and number of current joint GSCM initiatives
AIR - S3 (USA)	9	Fasteners	65	80	<ul style="list-style-type: none"> • Trusting, mutually depending relationship • High spend and sales volume for AIR and supplier
AIR - S4 (USA)	7	Seat cushions	25	35	<ul style="list-style-type: none"> • Second key supplier for seat cushions for AIR (behind S1) • Strong relationship with potential further business growth opportunities in the future
AIR - S5 (China)	3	Metal structural parts	20	30	<ul style="list-style-type: none"> • New supplier relationship • Established to build a presence in Asia in the short- to medium-term • AIR to expect an increase in products sourced from this supplier in the medium-term future
AIR - S6 (Germany)	10	Range of foam products	35	40	<ul style="list-style-type: none"> • Trusting, long-standing relationship • One of AIR's key green suppliers • Number of joint GSCM initiatives

**Financial values were not disclosed due to confidential, but percentages were provided to gauge relationship dependence.*

